

**ABSTRACT OF THE DISCLOSURE**

The invention relates to compositions and kits for homogeneous fluorescence polarization (anisotropy) assays for detecting and quantifying metal ions in solution. Metal-dependent binding of a fluorescent ligand to an unlabeled macromolecule effects a measurable change in anisotropy as will the binding of metal ions to a fluorescent labeled macromolecule. Binding of the fluorescent ligand to the unlabeled macromolecule is metal dependent with the change in anisotropy being proportional to the concentration of bound metal ions. Conversely, if the fluorescent label is first conjugated to a macromolecule and the macromolecule is subsequently stripped of metal ion, it may then be used to signal binding of metal ions. The covalently bound fluorescent label exhibits changes in anisotropy proportional to the concentration of bound metal ions. Kits comprise a fluorescent molecule and a macromolecule.